

Year 13

Organic chemistry

Furthering our knowledge of some functional groups including biological molecules, using NMR spectroscopy and Chromatography

Inorganic chemistry

Explaining properties of Period 3 elements and their oxides, Transition metals and the reactions of ions in aqueous solutions

Physical Chemistry

Developing the understanding of systems such as Equilibrium constant using K_p for homogeneous systems, Electrode potentials and electrochemical cells & Acids and bases

Physical Chemistry

Developing the ideas of Thermodynamics and Rate equations



Knowledge	Attributes / Character	Skills	Experiences
<p>Physical Chemistry</p> <ul style="list-style-type: none"> • Thermodynamics • Rate equations • Equilibrium constant • K_p for homogeneous systems • Electrode potentials and electrochemical cells • Acids and bases <p>Inorganic chemistry</p> <ul style="list-style-type: none"> • Properties of Period 3 elements and their oxides • Transition metals • Reactions of ions in aqueous solution <p>Organic chemistry</p> <ul style="list-style-type: none"> • Optical isomerism • Aldehydes and ketones • Carboxylic acids and derivatives • Aromatic chemistry • Amines • Polymers • Amino acids, proteins and DNA • Organic synthesis • Nuclear magnetic resonance spectroscopy • Chromatography 	<p>Confidence The A-Level Chemistry curriculum builds confidence by encouraging students to tackle complex concepts and challenging problems. Mastery of topics like atomic structure, thermodynamics, and organic synthesis requires critical thinking and a deep understanding of scientific principles. As students navigate through difficult subjects and successfully solve problems, they gain a sense of accomplishment and self-assurance in their abilities. Practical laboratory work further boosts confidence as students learn to conduct experiments, analyze results, and draw conclusions independently, reinforcing their competence in scientific inquiry.</p> <p>Organisation Studying A-Level Chemistry necessitates a high level of organisation. Students must manage a substantial amount of information, ranging from physical and inorganic chemistry to detailed organic chemistry topics. This requires systematic note-taking, effective time management, and the ability to prioritize tasks, especially when balancing theoretical learning with practical laboratory work. Structured revision and methodical preparation for exams cultivate strong organizational skills, which are essential not only in academics but also in everyday life and future careers.</p> <p>Resilience The rigorous nature of the A-Level Chemistry curriculum fosters resilience in students. The complexity of subjects such as kinetics, chemical equilibria, and electrode potentials can present significant challenges. Students learn to persevere through difficult concepts and recover from setbacks, such as experimental errors or initial misunderstandings of complicated topics. This persistence and the ability to overcome academic obstacles are key components of resilience. Through continuous effort and improvement, students develop a robust mindset that equips them to face future challenges with determination and grit.</p> <p>Empathy Chemistry education can also enhance empathy, particularly through collaborative projects and group experiments. Working together on laboratory tasks and discussing theoretical concepts with peers encourages students to appreciate different perspectives and support one another's learning journeys. Understanding the real-world applications of chemistry, such as environmental issues and the role of chemicals in health and medicine, helps students develop a broader awareness of societal impacts and the importance of scientific advancements in improving human well-being. This awareness fosters a sense of empathy towards global challenges and the people affected by them.</p>	<p>Recognizing Potential Errors and Calculating Uncertainties: Analysing experimental data from topics such as rate equations and equilibrium constants develops skills in identifying errors and calculating uncertainties, crucial for accurate scientific analysis.</p> <p>Mathematical techniques: Applying mathematical principles, such as using proportionality in thermodynamics and kinetics, enhances quantitative skills and understanding of relationships between variables.</p> <p>Independent Practical Skills: Conducting experiments independently in organic analysis and electrochemical cells fosters practical skills, including accuracy in measurements and proficiency in using specialised equipment.</p> <p>Collaborative Work: Engaging in group experiments and projects, particularly in transition metal chemistry and organic synthesis, cultivates teamwork skills and respect for diverse perspectives.</p> <p>Written and Oral Communication: Writing detailed scientific reports on topics like chemical equilibria and presenting findings in oral assessments enhances clarity and precision in scientific communication, both written and oral.</p> <p>Research and Presentation: Investigating topics such as nuclear magnetic resonance spectroscopy and presenting findings on chromatography develops research skills and the ability to convey complex scientific concepts effectively.</p> <p>Critical Thinking and Problem Solving: Analysing data from oxidation-reduction equations and applying concepts like Le Chatelier's principle in chemical equilibria fosters critical thinking and problem-solving abilities necessary for scientific inquiry.</p>	<ul style="list-style-type: none"> • Oxford University visit • Alton Towers visit • Scientific literacy (using the language of science) • Relevance to everyday life • Links to science in the media